

Dear Sirs,

Here are my comments on the long-awaited draft for public comment of NIST's report on WTC 7, issued by NIST on August 21st, 2008.

1. Collapse Models

NIST's computer-generated models of the collapse of WTC 7, as in Figure 12-69 of NCSTAR 1-9 and Figure E-4 of NCSTAR 1-9A, as well as the collapse models presented at http://www.nist.gov/public_affairs/releases/wtc_videos/wtc_videos.html do not correspond with the way in which the building can be seen descending on the several videos that captured the collapse. In the videos, the perimeter walls, connected to and supported by the large number of perimeter columns, retain their rectangular shape until late in the collapse; the perimeter columns clearly do not almost immediately buckle inwards over the building as they do in NIST's models. Therefore, NIST needs to develop a collapse model that describes the way in which WTC 7 actually collapsed on September 11th.

2. Heating of the Steel

The NIST draft report claims that parts of the steel were heated to high temperatures of up to and over 600 degrees Celsius (NCSTAR 1A, p. 19). However, as already stated in the NIST Advisory Committee meeting last December, the fires at any location in the building burned out quite rapidly, in approximately 20 minutes:

"At any given location the combustibles needed about 20 minutes to be consumed."

(Meeting of the National Construction Safety Team Advisory Committee, December 18, 2007, <http://wtc.nist.gov/media/NCSTACMeetingMinutes121807.pdf>, p. 5.)

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Dr. Shyam Sunder repeated several times that any combustibles at any one location in the building took about 20 minutes to be consumed. It is, of course, self-evident that fires cannot last for very long in one place in an office building, as there is not so much burnable material available. As NIST now (quite correctly) rules out any asymmetric edifice damage as a contributor to the building's sudden total collapse, all the changes that the fireproofed steel members might have undergone had to result from such short-lived fire exposure.

However, as detailed in the following engineering document by the Finnish Constructional Steelwork Association, for example, the temperature of fireproofed steel members remains under 200 degrees Celsius (390 Fahrenheit) during a 20-minute fire exposure in normal office fires, such as you now admit the fires in WTC 7 were:

<http://www.terasrakenneyhdistys.fi/suunnittelijoille/hitsatutprofiilit/HP5%20199-222%20A4.pdf>

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Please see the graph on p. 216. Allow me to translate the key terms for your convenience:

Aika = time (in minutes)

Lämpötila = temperature (Celsius)

Palosuojaajan poikkileikkauksen lämpötila = temperature of a fireproofed steel support

For floors 11 and 12, in NCSTAR 1-9, vol. 2, p. 375, NIST estimates a fuel load of 32 kg per square meter, which would yield a longer maximum fire time of 32 minutes. However, even after an exposure that long, the temperature of fireproofed steel would remain at, or below, 300 degrees Celsius (Finnish Constructional Steelwork Association, *op.cit.*, p. 216). Even such a temperature does not weaken construction steel significantly. As for thermal expansion, based on the equation for linear thermal expansion, the beams, 15.8 meters in length, could have expanded 0.019 meters for every 100 °C increase in temperature. As a beam expands in both directions and not just in one, half of that could have affected the "critical" girder in question. Thus, for a ~280-degree increase over its normal temperature, the beam would have expanded by less than 2.7 centimeters against the girder in question. Moreover, as different sections of the beam were exposed to varying temperatures below the maximum of 300 degrees Celsius, in reality the beam's expansion would have been correspondingly smaller – and certainly not enough to dislodge a large girder.

3. Shear Studs

However, any significant expansion against the girder would likely have been counteracted by the large number of shear studs that held the concrete floor attached to the beams and girders. As NIST points out in a 2005 document, "Most of the beams and girders [in WTC 7] were made composite with the slabs through the use of shear studs. Typically, the shear studs were 0.75 in. in diameter by 5 in. long, spaced 1 ft to 2 ft on center." (NCSTAR1-1, p. 14).

In the new draft report NIST states "In WTC 7 no studs were installed on the girders" (NCSTAR 1-9, p. 346), which contradicts the above-quoted earlier statement of shear studs being used in WTC 7's girders. NIST bases the new statement on the following reference: Irwin G. Cantor PC, Structural Engineers (1985). *Structural design drawings, 7 World Trade Center*. However, as NIST points out in Appendix L to the June 2004 progress report (L-6 and L-7), "Studs were not indicated on the design drawings for many of the core girders. The design drawings specified design forces for connections and suggested a typical detail, but did not show specific connection designs; this is standard practice on the U.S. east coast."

NIST needs to clarify the new evidence that indicates that, contrary to the earlier statements, shear studs were, after all, *not* used in the girders, as the use of shear studs would further counteract any potential heat expansion effects. If studs were in fact used, as NIST reported earlier, their effect on the expansion needs to be carefully scrutinized.

4. Evidence of Explosions in the Building

In the draft report, NIST excludes controlled demolition based on the argument that no loud sound was heard (NCSTAR 1-A, p xxxii). In fact, several people heard what they described as explosions from the building, including Craig Bartmer of the NYPD. His interview can be watched here:

http://www.dailymotion.com/video/xr89c_craig-bartmer-says-911-was-an-insid_news

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Barry Jennings of the Port Authority testified to the 9/11 Commission that he and his colleague Michael Hess (who has confirmed this) were trapped inside the building as a result of a powerful explosion that blocked their way out of the building. The men had to be helped out by the fire department.

In "Questions and Answers about the NIST WTC 7 Investigation," NIST discusses the explosions reported by Jennings as follows:

"If the two loud booms were due to explosions that were responsible for the collapse of WTC 7, the emergency responder – located somewhere between the 6th and 8th floors in WTC 7 – would not have been able to survive the near immediate collapse and provide this witness account."

An explosion somewhere inside a skyscraper can obviously weaken the integrity of the building without leading to an *immediate* collapse; therefore, the above argument is incorrect. The role of such an explosion in a later collapse would need to be investigated.

Furthermore, in the following excerpt from an investigative program by Italian TV, several loud explosions can be heard, one such explosion startling first responders close to WTC 7. In addition, a police officer can be seen and heard stating repeatedly, referring to WTC 7, that "the building is about to blow up".

<http://www.youtube.com/watch?v=Nu1VLMVv08s>

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As loud booms can in fact be heard on videos, as there are witnesses to explosions, and as the testimony by one emergency worker has been ignored by NIST on false pretenses, NIST needs to reconsider the role of explosions in the collapse of WTC 7.

5. Evidence of Extremely High Temperatures

In the draft report, NIST does not address the issue of the extremely high temperatures, in excess of 730 ° C., measured by NASA in the WTC 7 site as many as five days after the destruction, and the numerous reports and visual evidence of molten steel observed in and excavated from the remains:

http://pubs.usgs.gov/of/2001/ofr-01-0429/thermal_r09.html

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<http://911research.wtc7.net/wtc/evidence/moltensteel.html>

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http://wtc7.net/articles/stevenjones_b7.html

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Intergranular melting of the steel was also noted by FEMA based on one of the very few WTC 7 steel pieces salvaged from the building's remains.

http://911research.wtc7.net/wtc/evidence/metallurgy/WTC_apndxC.htm

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NIST, of course, is on the record claiming that "no steel was recovered from WTC 7."

Ordinary office fires are incapable of producing such high residual temperatures, let alone melting steel.

Before finalizing its report, NIST should also familiarize itself with the following two peer-reviewed articles. The first, published in an engineering journal, refers e.g. to residues of molten iron and molybdenum (melting point of the latter: 2,623° C.) in the samples collected by several research teams, including the U.S. Geological Survey; the second, published in an environmental science journal, finds evidence of energetic nanocomposites in the pile at Ground Zero. Clearly, the peer-reviewed evidence for such extremely high temperatures and anomalies needs to be explained.

Steven Jones, Frank Legge, et al, "Fourteen Points of Agreement with Official Government Reports on the World Trade Center Destruction," *The Open Journal of Civil Engineering*, Volume 2 Issue 1,

<http://www.bentham-open.org/pages/content.php?TOCIEJ/2008/00000002/00000001/35TOCIEJ.SGM>

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Kevin Ryan, James Gourley, and Steven Jones, "Environmental anomalies at the World Trade Center: evidence for energetic materials," *The Environmentalist*, August 2008, DOI: 10.1007/s10669-008-9182-4,

<http://www.springerlink.com/content/f67q6272583h86n4/>

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